

# SEQUENCE LISTING

<110> Fukuyama, Shiro

<120> Polypeptides Having Glucanotransferase  
Activity And Nucleic Acids Encoding Same

<130> 6012.200-US

<140> To be assigned

<141> 2000-10-13

<150> PA 1999 01501

<151> 1999-10-20

<150> PA 1999 01641

<151> 1999-11-15

<150> 60/160,903

<151> 1999-10-22

<150> 60/166,539

<151> 1999-11-18

<160> 6

<170> FastSEQ for Windows Version 4.0

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<212> DNA

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cgc ggt cgc tgg ggg att ggg gct ctg ggc cgc gag gcc gag cgg ttt 96

Pro Gly Arg Trp Gly Ile Gly Ala Leu Gly Arg Glu Ala Glu Arg Phe

20 25 30

ttg gac tgg ctg gcc gat gcg gga gcc cgc tgg tgg cag gtc tta ccg 144

Leu Asp Trp Leu Ala Asp Ala Gly Ala Arg Trp Trp Gln Val Leu Pro

35 40 45

ctg ggc cct acc agt tac ggc gac tcg ccg tac cag tcc ttc tcg gct 192

Leu Gly Pro Thr Ser Tyr Gly Asp Ser Pro Tyr Gln Ser Phe Ser Ala

50 55 60

ttt gcc ggt aac ccg tat ttg gtt gac ccc gag atg ctg att gaa aaa 240

Phe	Ala	Gly	Asn	Pro	Tyr	Leu	Val	Asp	Pro	Glu	Met	Leu	Ile	Glu	Lys	
65					70					75					80	
ggc	tgg	ctg	gaa	caa	agc	gaa	gcg	ccc	ccg	ccg	tat	ccg	acc	cag	cgc	288
Gly	Trp	Leu	Glu	Gln	Ser	Glu	Ala	Pro	Pro	Pro	Tyr	Pro	Thr	Gln	Arg	
			85					90						95		
gtg	gat	tat	ggc	tgg	ctt	tac	cag	acc	cgc	tgg	ccc	ctg	ttg	cgg	cgg	336
Val	Asp	Tyr	Gly	Trp	Leu	Tyr	Gln	Thr	Arg	Trp	Pro	Leu	Leu	Arg	Arg	
			100					105					110			
gct	ttc	gcg	ggg	ttt	cgg	gca	agg	gct	tcg	gcc	cag	gat	aag	acc	cga	384
Ala	Phe	Ala	Gly	Phe	Arg	Ala	Arg	Ala	Ser	Ala	Gln	Asp	Lys	Thr	Arg	
			115				120					125				
ctg	gaa	gcc	ttt	atc	gag	gcc	gag	cgc	ttc	tgg	ctg	gaa	gac	tat	gcg	432
Leu	Glu	Ala	Phe	Ile	Glu	Ala	Glu	Arg	Phe	Trp	Leu	Glu	Asp	Tyr	Ala	
			130				135					140				
ctc	ttt	atg	gcc	ctc	aag	acc	cgg	ttt	gac	ggc	aag	ccc	tgg	aac	gag	480
Leu	Phe	Met	Ala	Leu	Lys	Thr	Arg	Phe	Asp	Gly	Lys	Pro	Trp	Asn	Glu	
					150					155					160	
tgg	agc	ccc	gag	ctg	cgc	gac	cgt	gaa	ccg	gct	gcc	ctg	gcc	agg	gcc	528
Trp	Ser	Pro	Glu	Leu	Arg	Asp	Arg	Glu	Pro	Ala	Ala	Leu	Ala	Arg	Ala	
				165					170					175		
cgt	gag	gag	ctg	gcc	gag	gag	gtg	gcc	ctt	tac	gag	tgg	att	cag	tgg	576
Arg	Glu	Glu	Leu	Ala	Glu	Glu	Val	Ala	Leu	Tyr	Glu	Trp	Ile	Gln	Trp	
			180					185						190		
ctt	ttt	tat	ctg	gaa	tgg	ggc	cag	acc	aag	gcc	tat	gcc	gaa	tcc	aag	624
Leu	Phe	Tyr	Leu	Glu	Trp	Gly	Gln	Thr	Lys	Ala	Tyr	Ala	Glu	Ser	Lys	
			195				200					205				
ggg	att	cag	att	atc	ggc	gat	atg	ccc	atc	ttt	gtg	gcc	ttc	gat	tcc	672
Gly	Ile	Gln	Ile	Ile	Gly	Asp	Met	Pro	Ile	Phe	Val	Ala	Phe	Asp	Ser	
			210				215					220				
tca	gat	gtc	tgg	gcc	aac	ccg	cag	tac	ttc	tac	ctc	gag	gcc	gat	ggc	720
Ser	Asp	Val	Trp	Ala	Asn	Pro	Gln	Tyr	Phe	Tyr	Leu	Glu	Ala	Asp	Gly	
					230					235					240	
aac	ccc	acg	gtg	gtg	gcg	ggc	ggt	ccg	cgg	gac	tac	ttc	tcc	gaa	acc	768
Asn	Pro	Thr	Val	Val	Ala	Gly	Val	Pro	Arg	Asp	Tyr	Phe	Ser	Glu	Thr	
				245					250					255		
ggc	cag	ctc	tgg	ggc	aat	ccg	ctc	tat	cgc	tgg	gat	gtg	atg	gaa	agg	816
Gly	Gln	Leu	Trp	Gly	Asn	Pro	Leu	Tyr	Arg	Trp	Asp	Val	Met	Glu	Arg	
			260					265						270		
gac	aac	ttt	gcc	tgg	tgc	att	gcc	cgc	ata	agg	cag	tcg	ctc	aag	cag	864
Asp	Asn	Phe	Ala	Trp	Cys	Ile	Ala	Arg	Ile	Arg	Gln	Ser	Leu	Lys	Gln	
			275				280							285		
tgc	cac	ctg	gtg	cgc	atc	gac	cac	ttc	cgc	ggg	ttt	gaa	gcc	tac	tgg	912
Cys	His	Leu	Val	Arg	Ile	Asp	His	Phe	Arg	Gly	Phe	Glu	Ala	Tyr	Trp	

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gag gtt ccg ttt ggc cgg ccc aat gct gtg gag ggg cgc tgg gtc aaa			960
Glu Val Pro Phe Gly Arg Pro Asn Ala Val Glu Gly Arg Trp Val Lys			
305	310	315	320
gcc cca ggg gag aag ctg ttt gct gcg gtg cgg gcc caa ctg agc gat			1008
Ala Pro Gly Glu Lys Leu Phe Ala Ala Val Arg Ala Gln Leu Ser Asp			
325	330		335
gcg ccc atc att gcc gaa gac ctg ggg gtg atc acc ccc gag gtg gag			1056
Ala Pro Ile Ile Ala Glu Asp Leu Gly Val Ile Thr Pro Glu Val Glu			
340	345		350
gct ttg cgc gat ggc ttc ggg ttc ccc ggc atg aag att ttg cag ttt			1104
Ala Leu Arg Asp Gly Phe Gly Phe Pro Gly Met Lys Ile Leu Gln Phe			
355	360		365
gct ttt tcc ggt gag gac aac gcc ttt ttg ccc cac aac tac ccc gcg			1152
Ala Phe Ser Gly Glu Asp Asn Ala Phe Leu Pro His Asn Tyr Pro Ala			
370	375		380
cac ggc aat gtg gtg gtg tac agc gga acc cac gac aac gac acc acc			1200
His Gly Asn Val Val Val Tyr Ser Gly Thr His Asp Asn Asp Thr Thr			
385	390	395	400
ctg gga tgg ttc cgc acc gcg ccg gag gcc gag cgg gcc ttc atg cgg			1248
Leu Gly Trp Phe Arg Thr Ala Pro Glu Ala Glu Arg Ala Phe Met Arg			
405	410		415
gcc tac ctg gcc cgc tat ggc atc cgt tgt ttg tgc gaa tac gag gtc			1296
Ala Tyr Leu Ala Arg Tyr Gly Ile Arg Cys Leu Ser Glu Tyr Glu Val			
420	425		430
gcg ggc gct ttg atc gag ctg gcc ttc aaa agc ccg gcc aag ctg gct			1344
Ala Gly Ala Leu Ile Glu Leu Ala Phe Lys Ser Pro Ala Lys Leu Ala			
435	440		445
att gtg cct ttg cag gac gtg ctg ggg ctg ggc ccc gag gcc cgc atg			1392
Ile Val Pro Leu Gln Asp Val Leu Gly Leu Gly Pro Glu Ala Arg Met			
450	455		460
aac ttc ccc gga cgg ctg ggg gac aac tgg gcg tgg cgc tac gcc gaa			1440
Asn Phe Pro Gly Arg Leu Gly Asp Asn Trp Ala Trp Arg Tyr Ala Glu			
465	470	475	480
ggc gac ctc gag ccc ggt ctg gcc gcg gga ctg cgg gcc ctg gcc gag			1488
Gly Asp Leu Glu Pro Gly Leu Ala Ala Gly Leu Arg Ala Leu Ala Glu			
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gcc agc cag cgc gct			1503
Ala Ser Gln Arg Ala			
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<212> PRT

<213> Thermus rubens

<400> 2

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Leu	Asp	Trp	Leu	Ala	Asp	Ala	Gly	Ala	Arg	Trp	Trp	Gln	Val	Leu	Pro
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Leu	Gly	Pro	Thr	Ser	Tyr	Gly	Asp	Ser	Pro	Tyr	Gln	Ser	Phe	Ser	Ala
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Phe	Ala	Gly	Asn	Pro	Tyr	Leu	Val	Asp	Pro	Glu	Met	Leu	Ile	Glu	Lys
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Gly	Trp	Leu	Glu	Gln	Ser	Glu	Ala	Pro	Pro	Pro	Tyr	Pro	Thr	Gln	Arg
				85				90						95	
Val	Asp	Tyr	Gly	Trp	Leu	Tyr	Gln	Thr	Arg	Trp	Pro	Leu	Leu	Arg	Arg
			100					105					110		
Ala	Phe	Ala	Gly	Phe	Arg	Ala	Arg	Ala	Ser	Ala	Gln	Asp	Lys	Thr	Arg
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Leu	Glu	Ala	Phe	Ile	Glu	Ala	Glu	Arg	Phe	Trp	Leu	Glu	Asp	Tyr	Ala
	130					135					140				
Leu	Phe	Met	Ala	Leu	Lys	Thr	Arg	Phe	Asp	Gly	Lys	Pro	Trp	Asn	Glu
145					150					155					160
Trp	Ser	Pro	Glu	Leu	Arg	Asp	Arg	Glu	Pro	Ala	Ala	Leu	Ala	Arg	Ala
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Arg	Glu	Glu	Leu	Ala	Glu	Glu	Val	Ala	Leu	Tyr	Glu	Trp	Ile	Gln	Trp
			180					185					190		
Leu	Phe	Tyr	Leu	Glu	Trp	Gly	Gln	Thr	Lys	Ala	Tyr	Ala	Glu	Ser	Lys
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Gly	Ile	Gln	Ile	Ile	Gly	Asp	Met	Pro	Ile	Phe	Val	Ala	Phe	Asp	Ser
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Ser	Asp	Val	Trp	Ala	Asn	Pro	Gln	Tyr	Phe	Tyr	Leu	Glu	Ala	Asp	Gly
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Asp	Asn	Phe	Ala	Trp	Cys	Ile	Ala	Arg	Ile	Arg	Gln	Ser	Leu	Lys	Gln
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Cys	His	Leu	Val	Arg	Ile	Asp	His	Phe	Arg	Gly	Phe	Glu	Ala	Tyr	Trp
	290					295					300				
Glu	Val	Pro	Phe	Gly	Arg	Pro	Asn	Ala	Val	Glu	Gly	Arg	Trp	Val	Lys
305					310					315					320
Ala	Pro	Gly	Glu	Lys	Leu	Phe	Ala	Ala	Val	Arg	Ala	Gln	Leu	Ser	Asp
			325						330					335	
Ala	Pro	Ile	Ile	Ala	Glu	Asp	Leu	Gly	Val	Ile	Thr	Pro	Glu	Val	Glu
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Ala	Leu	Arg	Asp	Gly	Phe	Gly	Phe	Pro	Gly	Met	Lys	Ile	Leu	Gln	Phe
		355					360					365			
Ala	Phe	Ser	Gly	Glu	Asp	Asn	Ala	Phe	Leu	Pro	His	Asn	Tyr	Pro	Ala
	370					375					380				
His	Gly	Asn	Val	Val	Val	Tyr	Ser	Gly	Thr	His	Asp	Asn	Asp	Thr	Thr
385					390					395					400
Leu	Gly	Trp	Phe	Arg	Thr	Ala	Pro	Glu	Ala	Glu	Arg	Ala	Phe	Met	Arg
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Ala	Tyr	Leu	Ala	Arg	Tyr	Gly	Ile	Arg	Cys	Leu	Ser	Glu	Tyr	Glu	Val

420 425 430  
 Ala Gly Ala Leu Ile Glu Leu Ala Phe Lys Ser Pro Ala Lys Leu Ala  
 435 440 445  
 Ile Val Pro Leu Gln Asp Val Leu Gly Leu Gly Pro Glu Ala Arg Met  
 450 455 460  
 Asn Phe Pro Gly Arg Leu Gly Asp Asn Trp Ala Trp Arg Tyr Ala Glu  
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